

REMARKS

Claims 1 and 3-5 are all the claims pending in the application.

Claim Rejections

Claims 1 and 3-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Anderson et al. (U.S. Patent No. 6,690,868) in view of Nolf et al. (U.S. Patent No. 5,450,192). Applicants respectfully traverse.

Claim 1 recites that **both** the inner cladding and the ring of the optical fiber have phosphorous contents in the range of 0.03 wt% to 0.1 wt%. Claim 1 further recites that the optical fiber perform is prepared by a FCVD process. The present application teaches that by using a phosphorus content of less than or equal to 0.1 wt %, a precise index profile can be achieved. Applicants submit that claim 1 is allowable at least because the combined teachings and suggestions of Anderson and Nolf fail to teach a CVD process which includes these features.

As noted by the Examiner, Anderson teaches an inner cladding with a phosphorus content of 0.7 mol%. However, the Examiner's assertion that this corresponds to a phosphorus content of 0.01% by weight is incorrect. Assuming the presence of 100 moles, the following is observed:

Chemical compound	Mol	Structure	Molecular weigh (grammes/mol)	Weight (grammes)
Silica	98.5	SiO ₂	60 (28+16+16)	5910
Fluorine	0.8	F	19	15.2
Phosphorous oxide	0.7	PO _{2.5}	71 (31+(2.5x16))	49.7
Total	100	--	--	5974.9

As shown in the table, 100 mols leads to a total weight of 5874.9 grams. The weight percentage of phosphorus oxide equals $49.7/5974.9 = 0.83 \text{ wt\%}$. The percentage of the weight of phosphorus in phosphorus oxide is $(31/71)$. Accordingly, the weight percentage of phosphorus in the inner cladding is $(31/71)*0.83 \text{ wt\%} = 0.36\%$. As noted above, claim 1 recites a weight percentage of between 0.03 and 0.1. Thus, the weight percentage of phosphorus in Anderson is far outside of the claimed range. Indeed, it is more than three times the maximum weight percentage defined by the claim. Therefore, Anderson, which the Examiner relies upon for the claimed phosphorus content, does not have a phosphorus content as claimed.

Furthermore, one of ordinary skill in the art would not have lowered the phosphorus content of the inner cladding of Anderson from the 0.36 wt % of Anderson to 0.1 wt % or less. Considering the much higher amount disclosed in Anderson, such a modification would require an extreme reduction in phosphorus content. Anderson discloses a CVD process and, as is known to one of ordinary skill in the art, lowering the phosphorus content of such CVD processes normally causes significant problems. Accordingly, one of ordinary skill in the art would not have been motivated to perform an extreme reduction of phosphorus to reach the claimed invention and sufficient motivation for such a modification is not present in the cited references.

Nolf discloses that larger performs can be made using an FCVD process. However, Nolf also does not teach that lowering the amount of phosphorus to a value of 0.1 wt % or less with the FCVD process. Accordingly, even if it were appropriate to modify Anderson with Nolf, as suggested by the Examiner, the combination still would not meet the claimed invention.

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Appln. No. 10/720,670
Atty. Docket No. Q78568

In view of the above, even the combined teachings and suggestions of Anderson and Nolf would not result in an optical fiber made by an FCVD process and including a phosphorus content, as set forth in claim 1. Claims 3-5 depend from claim 1 and are allowable at least by virtue of their dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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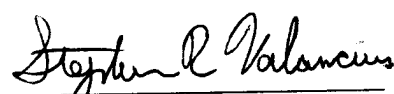
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